

REMARKS

Claims 1-15 are all of the claims presently pending in the application. Claims 1-2 have been amended to more particularly define the invention. Claims 3-15 have been added to claim additional features of the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicants appreciate the Examiner's indication that claim 2 would be allowable if rewritten in independent form. However, Applicants respectfully submit that all of the claims are allowable.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Kinoshita, et al. (U.S. Patent No. 4,887,131).

This rejection is respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined in claim 1) is directed to an electronic photographing apparatus. The apparatus includes a developer including a toner and a carrier, a development unit including a developer roll having magnetic poles therein, a development bias power source for applying to the developer roll a development bias voltage where an AC voltage is superimposed on a DC voltage, and a photosensitive body. The electronic photographing apparatus develops a latent image on the photosensitive body by using the toner to form an image. The ratio of the volume of the carrier in a space sandwiched between the developer roll and the photosensitive body is within a range of from 32 percent to 46 percent.

Conventional photographing apparatus provide a development process using a two-component developer including a mixture of toner and a carrier. A development unit uses a developer roll including an internal magnet and an external rotary cylinder to convey a developer to a development section as a gap between the photosensitive body and the developer roll. A development bias voltage including an AC voltage superimposed on a DC

voltage is used to adhere the toner to the photosensitive body.

The claimed invention of exemplary claim 1, on the other hand, provides an electronic photographing apparatus wherein the ratio of the volume of the carrier in a space sandwiched between the developer roll and the photosensitive body is within a range of from 32 percent to 46 percent (see Application at page 3, lines 22-25). This allows an electronic photographing apparatus to obtain a good-quality image in the case where an AC voltage is used as a development bias voltage on a high-speed printer or copier whose printing speed exceeds 60 A4 sheets per minute (see Application at page 3, lines 18-21).

II. THE PRIOR ART REFERENCE

The Examiner alleges that Kinoshita teaches the claimed invention of claim 1. Applicants submit, however, that there are elements of the claimed invention which are neither taught nor suggested by Kinoshita.

That is, Kinoshita does not teach or suggest "wherein the ratio of the volume of the carrier in a space sandwiched between the developer roller and the photosensitive body is within a range of from 32 percent to 46 percent" as recited in claim 1.

The Examiner does not specifically point out which portion of Kinoshita she is relying on to support her allegations. The Examiner has merely stated that Kinoshita teaches all of the features of the claimed invention recited in claim 1. The Examiner, however, is clearly incorrect.

That is, nowhere does Kinoshita teach or suggest an electronic photographing apparatus wherein the ratio of the volume of the carrier in a space sandwiched between the developer roll and the photosensitive body is within a range of from 32 percent to 46 percent. Indeed, the Examiner does not even allege that Kinoshita teaches or suggests this feature. The Examiner merely alleges that Kinoshita teaches this percentage range since the claimed space can be defined as any size within the total space between the developer roller and the photosensitive body.

Applicants have discovered a specific percentage range for the ratio of the volume of the carrier to the space between the developer roll and the photosensitive body that achieves a recognized result. The specific range recited in claim 1 allows the claimed invention to obtain

a good-quality image in the case where an AC voltage is used as a development bias voltage on a high-speed printer or copier whose printing speed exceeds 60 A4 sheets per minute.

The claimed range recited in claim 1 is important for achieving the desired results of the claimed invention. A specific range or other variable in a claim may provide patentable weight to a claim if the applicant can show that the particular range is important (see M.P.E.P. § 2144.05). In order to anticipate this claimed range, the specific limitation must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute" (see M.P.E.P. § 2131.03). As stated above, Kinoshita does not even mention a ratio of the volume of the carrier to the space between the developer roller and the photosensitive body, let alone teach or suggest the specific percentage range for the ratio recited in claim 1. Kinoshita merely teaches a ratio of the volume occupied by magnetic particles to the space of a development section is 1.5 to 30 percent and the amount of a developer on the developer roll is 5 to 50 mg/cm² (e.g., see Kinoshita at column 12, lines 54-66) which is similar to the approach described in the Description of the Related Art section of the Application (see page 2, lines 22-25; description of JP-B-01534).

The technical problem to be solved by the present invention is preventing traces of a rub by carriers on a printed image. The amount of developer applied can be adjusted with an interval between the developer restricting member (47) and the developer roller (41). Widening this interval increases the amount of developer applied and the volume occupied by the developer in the development section of the apparatus. A force of rubbing the photosensitive body is also increased. An extremely high density unfavorably leaves trace of a rub by the carrier (see Application at page 7, lines 2-12).

Applicants have discovered that a sufficient image density is obtained with a carrier volume ratio in the developer being 32 percent or more. In the case where the volume ratio exceeds 46 percent, however, the resulting image shows the effect of a rub. Table 1 on page 9 of the Application further demonstrates the effects of changing the ratio of the volume of the carrier in the developer.

Thus, Applicants have discovered a specific range, from 32 percent to 48 percent, that solves the technical problem of the present invention. This feature is clearly not taught or suggested by Kinoshita and it is improper for the Examiner to overlook this inventive feature by merely stating that the claimed space can be defined as any size within the total space

between the developer roller and the photosensitive body.

Therefore, the specific ratio range recited in claim 1 clearly shows a technical effect and is not arbitrarily selected to solve the technical problems.

Therefore, Applicants submit that there are elements of the claimed invention that are not taught or suggest by Kinoshita. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. NEW CLAIMS

New claims 3-15 are added to claim additional features of the present invention and to provide more varied protection for the present invention. These claims are independently patentable because of the novel features recited therein.

Applicants respectfully submit new claims 3-15 are patentable over any combination of the applied references at least for analogous reasons to those set forth above with respect to claims 1 and 2.

IV. FORMAL MATTERS AND CONCLUSION

Applicants thank the Examiner for indicating that the Information Disclosure Statement (IDS) submitted on January 29, 2004 has been considered. However, Applicants respectfully request the Examiner to consider the foreign patents submitted therewith, as well.

The Examiner has indicated that several of the references (i.e., JP 63-25350, JP 3-2304, JP 8-1534, and JP 7-62779) have not been considered because they did not include an English Abstract or a translation. Applicants, however, respectfully submit that they have fully complied with the duty of disclosure.

That is, Applicants have fully complied with M.P.E.P. § 609 and 37 C.F.R. § 1.97-1.99 regarding the submission of foreign language documents. In full compliance with M.P.E.P § 609 and 37 C.F.R. § 1.97-1.99, a concise explanation of the relevant portions indicating the disagree of relevance of each of the foreign references is included in the Description of Related Art section of the Application (see Application at page 2, line 12 through page 3, line 8 and page 7, lines 7-21) as was clearly indicated in the IDS filed on January 29, 2004. Again, this is in full compliance with M.P.E.P. § 609 and 37 C.F.R. § 1.97-1.99.

Further, Applicants note that there is no requirement in 37 C.F.R. or the M.P.E.P. for "complete English translation" of a foreign language reference in order for the Examiner to consider the reference.

Hence, the Examiner MUST consider the foreign references to the extent possible and initial the form PTO-1449 for the IDS filed on January 29, 2004. For the Examiner's convenience, a duplicate copy of the respective form PTO-1449 is re-submitted herewith.

However, merely to speed prosecution, Applicants concurrently file herewith English Abstracts for JP 63-25350, JP 8-01534, and JP 2646221. Additionally, Applicants point out to the Examiner that foreign references JP 3-02304 and JP 7-62779 have corresponding counterpart U.S. Patents; U.S. Patent Number 4,599,285 and 4,873,531, respectively.

In view of the foregoing, Applicants submit that claims 1-15, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

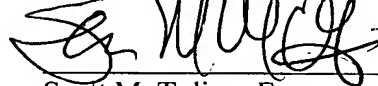
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Date:

2/28/05

Respectfully Submitted,



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